

Figure 1: MS alignment

<p>1</p> <p>E. coli MS</p> <p>yeast MS</p> <p>tobacco MS</p> <p>C. roseus MS</p> <p>corn MS/partial</p> <p>soy MS/partial</p>	<p>MTILNHTLGFPRVGLRRELKKAAQESYWAGNSTREELLAUGREELRARRHWDQQKQAGIDLLP MVQ..SAVLGFPRIGPNRRELKKATEGYWNGKITVDELFKVKGKDILRTQNWKIQLKEAGYDIIIP MA..SHIVGYPRMGPKRELKFALESFWDGKSQAEDLKKVAADLRSIWIWKQMADAGIKYIP MA..SHIVGYPRMGPKRELKFALESFWDKKSSAEDIQKVAADLRSIWIWKQMADAGIKYIP</p>	<p>60</p>
<p>E. coli MS</p> <p>yeast MS</p> <p>tobacco MS</p> <p>C. roseus MS</p> <p>corn MS/partial</p> <p>soy MS/partial</p>	<p>VGDFAWYDHVLTTSLLGNVPARHQN.KDGHSVDidTlFRIGRG.RAPTGE...PAAA SNDFSFYDQVLDLSLLFNVIPDRYTKYDLSP...DTLFAMGRGLQRKATEKAVDVTAL XNTFSYYDQVLDTTAMLGAVPARY.NWAGGEIAFDTYFSMARG...NXSVPAM SNTFSYYDQVLDTTATMLGAVPPRY.NFAGGEIGFDTYFSMARG...NASVPAM</p>	<p>120</p>
<p>E. coli MS</p> <p>yeast MS</p> <p>tobacco MS</p> <p>C. roseus MS</p> <p>corn MS/partial</p> <p>soy MS/partial</p>	<p>EMTKWFNTNYHYMMVPEFVKGQQQFKLTWTQLLDEVDEALALGHKVKPVLLGPVTLWLGKV EMVKWFDSNYHYVRPTFSKTTQFKLNGQKPVDEFLAEKEILGIHTRPVLLGPVSYLFLGKA EMTKWXDTNYHFIVPELGPDVNFSYASHKAVDEYKEAKGLGVDTVPVLLGPVSYLLLSKP EMTKWFDTNYHYIVPELGPVNFSYASHKAVNEYKEAKELGVDTVPVLLGPVTFLLSKP</p>	<p>180</p>
<p>E. coli MS</p> <p>yeast MS</p> <p>tobacco MS</p> <p>C. roseus MS</p> <p>corn MS/partial</p> <p>soy MS/partial</p>	<p>EMTKWFNTNYHYMMVPEFVKGQQQFKLTWTQLLDEVDEALALGHKVKPVLLGPVTLWLGKV EMVKWFDSNYHYVRPTFSKTTQFKLNGQKPVDEFLAEKEILGIHTRPVLLGPVSYLFLGKA EMTKWXDTNYHFIVPELGPDVNFSYASHKAVDEYKEAKGLGVDTVPVLLGPVSYLLLSKP EMTKWFDTNYHYIVPELGPVNFSYASHKAVNEYKEAKELGVDTVPVLLGPVTFLLSKP</p>	<p>240</p>
<p>E. coli MS</p> <p>yeast MS</p> <p>tobacco MS</p> <p>C. roseus MS</p> <p>corn MS/partial</p> <p>soy MS/partial</p>	<p>KGEQ..FDRILSLLNDILPVYQQVLAELAKRGIEWVQIDEPAVLVELPQAWLDAYKPAYD DKDSLIDLEPL.SLLEQLLPLYTEILSKLASAGATEVQIDEPVLVLDLPANAQAAIKKAYT AKGVEKSFPILLSLLDKVLPIYKEVIAELKAAGASWIQFDEPTLVLDLQAHQLEAFTKAYA AKGVEKTFPLLSLLDKILPVYKEVIGELKAAGASWIQFDEPTLVLDLESHQLEAFTKAYS</p>	<p>181</p>

FIGURE 1 CONTINUED

241	<i>E. coli</i>	MS	ALQGQV...KLLITTYFEGVTPN...	LDTITALPVQGLHVVDLVHGKDDVAELHKRLP
	yeast	MS	YFGEQSNLPKITILATYFGTVVPN...	LDAIKGLPVAALHVDFVRAPEQFDEVVAI
	tobacco	MS	ELESSLSGLNVLTETYFADVPAEAFKT	GTLIDLIKGGFP
	<i>C. roseus</i>	MS	ELESTLSGLNVIVETYFADI	PAETYKILTAKG..VTAGFFDLVRGA
	corn	MS/partial	...MS/partial	...TLDLIKGGFP
	soy	MS/partial	...MS/partial	...
300				
301	<i>E. coli</i>	MS	WLLSAGLINGRNVWRADLTEKYAQIK...	DIVGKRDLDWVASSCSLLHSPIDLSVETRLD
	yeast	MS	QTLSVGIVDGRNIWKNDFKKSSAIVNKAIE	KLGAIEKLGADR
	tobacco	MS	WANDLAASLNLLQSLEGIVGKD	KLVVMNETKLDD
	<i>C. roseus</i>	MS	KYLFA	GVV
	corn	MS/partial	...MS/partial	...GRNIWANDLAASLSTLQSLEGIVGKD
	soy	MS/partial	...MS/partial	...KLVVMNETKLDD
360				
361	<i>E. coli</i>	MS	EVKSWFAFALQKCHELALLRDALNSGDTAA.	LAEWSAPIQARRHSTRVHNPAVEKRLAAI
	yeast	MS	EIKGFFSFATQKLDEVVVITKNVSGQQDVAA	ALEANAKSVIESRGKSFKFIHDAVKRRV
	tobacco	MS	EIKSWLAFAAQKVVEVNALAKALAXHKDEAFF	SANATAQASRKSSPRVTNEAVQKAA
	<i>C. roseus</i>	MS	EIKSWLAFAAQKVVEVNALAKALAGEKDEAFF	SENAAAQASRKSSPRVTNQAVQKAA
	corn	MS/partial	...MS/partial	...
	soy	MS/partial	...MS/partial	...FAAQKVVEVNALAKALSGQKDEVFFS
420				
421	<i>E. coli</i>	MS	TAQDSQRANVYEVRAEAQRARFKLP	PAWPTTIGSF
	yeast	MS	DEKMSTRAAPFEQRLPEQQKVFNLP	PQTTEIRTIRLDFKKGNLDANNYRT
	tobacco	MS	KGSDDHRRATNVSSRLDAQQQKKLNL	PFTTIGSF
	<i>C. roseus</i>	MS	PVLPTTIGSF	PQTDIRINRNKFNKGTISAE
	corn	MS/partial	PVLPTTIGSF	YYEK
	soy	MS/partial	POTLELRRVREYKAKKISEDDYVK	
480				

FIGURE 1 CONTINUED

481	E. coli	MS	GIAEHIKQAAIVEQERLGLDVLVHGEAERNDMVEYFGEHLDGFVFTQNGWVQSYGSRCVVKP FINSEIEKVIIRFQEEIGLDVLVHGEPERNDMVQYFGEQINGYAFTVNGWVQSYGSRYVVRP AIKAIEIKKVVVDLQEEELDIDVLVHGEPERNDMVEYFGEQLSGFAFTANGWVQSYGSRCVVKP AIKEEISKVVVKLQEEELDIDVLVHGEPERNDMVEYFGEQLSGFAFTANGWVQSYGSRCVVKP AIMEXISKKVRIQEEELDIDVVVHGEPERXDXXXXFGEEXLSAFASTATGWXXSYGSR. SIKEEIRKVVELQEEELDIDVLVHGEPERNDMVEYFGEQLSGFAFTVNGWVQSYGSRCVVKP soy MS/partial
540	E. coli	MS	PIVIGDISRPAPITVEWAKYAQSLLTDKPVKGMLTGPVTTILCWSFPREDVSRETIAKQIAL PIIVGDLSRPKAMSVKESVVAQSITSKPVKGMLTGPVTTILCRWSFPRDDVDDQKTQAMQLAL PIIYGDVSRPNPMVTWFWSKTAQSMSMTKRPKGMILTGPVTTILNWSFVRRNDQPRXETCYQIAAX PIIYGDVSRPNPMVTWFWSQTAQSMSMTKRPKGMILTGPVTTILNWSFVRRNDQPRFETCYQIAAL corn MS/partial soy MS/partial
541	E. coli	MS	PIIYGDVSRPKPMTVFWSSLAQSFTRPKGMILTGPVTTILNWXFVRRNDQPRSETTYQIAL PIIYGDVSRPKPMTVFWSSLAQSFTRPKGMILTGPVTTILNWXFVRRNDQPRSETTYQIAL yeast MS tobacco MS C. roseus MS
600	E. coli	MS	ACVMKWPIWKPLEASSRLTNRRLRQGLPLRRS. DWDAYLQWGVEAFRINA AVAKDDTTQI ALRDEVNDLEAAGIKVIQVDEPALREGLPLREGTERSAYYTWAEEAFRVATSGVANKTQI XIKDEVEDLEKAXITVIQIDEAALREGLPLRKA. EHAFYLNWAVHSFRITNVGIQDTTQI AIKDEVEDLEKAGINVVIQIDEAALREGLPLRKA. EHAFYLDWAVHSFRITNLPLQDTTQI corn MS/partial soy MS/partial
601	E. coli	MS	AIKDEVEDLEKAGITVIQIDEAALREGLPLXKS. EQAHYLDWAVHAFRITNVGVQDTTQI ACVMKWPIWKPLEASSRLTNRRLRQGLPLRRS. DWDAYLQWGVEAFRINA AVAKDDTTQI ALRDEVNDLEAAGIKVIQVDEPALREGLPLREGTERSAYYTWAEEAFRVATSGVANKTQI XIKDEVEDLEKAXITVIQIDEAALREGLPLRKA. EHAFYLNWAVHSFRITNVGIQDTTQI AIKDEVEDLEKAGINVVIQIDEAALREGLPLRKA. EHAFYLDWAVHSFRITNLPLQDTTQI corn MS/partial soy MS/partial
661	E. coli	MS	HTHMCYCEFNDIMDSIAALDRDVITIE. TSRSDMELLESFEE. FDYPNEIGPGVYDIHSP yeast MS tobacco MS C. roseus MS
720	E. coli	MS	HTHMCYCEFNDIMDSIAALDRDVITIE. TSRSDMELLESFEE. FDYPNEIGPGVYDIHSP HSHFCYSDDLDP. NHIKALDAVVVSIEFSKKDDANYIAEFKN. . . YPNHIGLGLFDIHS HTHMCYSNFNDI IHSIIDMDADDVITIE. NSRSDEKLLSVFREGVKYGAGIGPGVYDIHSP HTHMCYSNFNDI IHSIIDMDADDVITIE. NSRSSEKLLSVFREGVKYGAGIGPGVYDIHSP corn MS/partial soy MS/partial

FIGURE 1 CONTINUED

721 NVPSVIEWSALLKKAAKRIPAERLWVNPNPDCGLKTRGPETRAALANMVQAAQNLRRG.
E. coli MS RIPSKEDEFIAKISTILKSYPAEKFVVNPDCGLKTRGWEETRLSLTHMVEAAKYFREQY.
yeast MS RIPSTEEIADRVNKMILAVLDTNILWVNPNPDCGLKTRKYAEVVKPALENMVSAAKAIRTQLAS
tobacco MS RIPSTEEIADRINKMLAVLDTNILWVNPNPDCGLKTRKYAEVVKPALENMVSAAKLIRTLAS
C. roseus MS corn MS/partial RIPPTEEIADRINKMLAVLEKNILWVNPNPDCGLKTRKYTEVKPALTNMVAAKLIRNELAK
soy MS/partial

780
781 E. coli MS ...
yeast MS KN.
tobacco MS SK.
C. roseus MS AK.
corn MS/partial ...

FIGURE 2

MASHIVGYPRMGPKRELKFALESFWDGKSSAEDLEKVAIDLRSIWKQMSEAGIKYIIPSN
MASHIVGYPRMGPKRELKFALESFWDGKSSAEDLQKVAADLRSIWKQMAGAGIKYIIPSN
MASHIVGYPRMGPKRELKFALESFWDGKSSAEDLKKVAADLRSIWKQMADAGIKYIIPSN
MASHIVGYPRMGPKRELKFALESFWDGKSSAEDLEKVAADLRSIWKQMSEAGIKYIIPSN
MASHIVGYPRMGPKRELKFALESFWDKKSSAEDLQKVAADLRSIWKQMADAGIKYIIPSN
1 60

TSSYYDQVLDTTAMLGAVERYSWTGGEEIGLSTYFSMARGNATVPAMEMTKWFDTNHYFII
TFSFYDQLL DATA T LGA V P R Y G W T G G E I G F D T Y F S M A R G N A T V P A M E M T K W F D T N Y H F I
TFSYYDQVLDTTAMLGAVERYSWTGGEEIGHSTYFSMXKGNA S V P A M E M T K W F D T N Y H F I
TFSYYDQVLDTTAMLGAVERYSWTGGEEIGHSTYFSMXKGNA S V P A M E M T K W F D T N X H F X
TFSYYDQVLDTTAMLGAVERYSWTGGEEIGHSTYFSMXKGNA S V P A M E M T K W F D T N Y H Y I
1 61 120

VPELGPSKFTYASHKAVSEYKEAKALGIDTVPVLVGPVSYLLSKPAKGVEKSFSLLSL
VPELGPDVNFTXASQKAVDEYKEAKALGVDTIPVLVGPVTYLLSKPAKGVEKSFSLLSL
VPELGPDVNFSYASHKAVDEYKEAKGLGVDTVPVLIGPVSYLLSKPAKGVEKSFSPLLLSL
VPEL-----
VPELGPEVNFSYASHKAVNEYKEAKELGVDTVPVLVGPVTFLLLSKPAKGVEKTFPLLLSL
1 121 180

FIGURE 2 CONTINUED

SEQ	ID NO: 02	LGSILPIYKEVVAELKAAGASWIQQLDEPTLVKDLDAHEFLAAFSSAYAELLESSESGLNVLI
SEQ	ID NO: 04	LPKVLAVYKEVVIADLKAGASWIQFDEPTLVLDLESHKLQAFDTDAYAELAPALSDLNVLV
SEQ	ID NO: 06	LDKVLPYKEVIAELKAAGASWIQFDEPTLVLDLQAHQLEAFTKAYAELESSLSGLNVLT
SEQ	ID NO: 08	-----
SEQ	ID NO: 10	-----
SEQ	ID NO: 11	LDKILPVYKEVIGELKAAGASWIQFDEPTLVLDLESHQLEAFTKAYSELESTLSGLNVIV

*****	SEQ ID NO:02	ETYFADIPAESYKTLTSLSGVVTAYGFEDLIRGAKTLDDLIRSSFPSGKYLFGAGVVDFGRNIWA
*****	SEQ ID NO:04	ETYFADIPAEAAYKTLTSLNGVVTAYGFDLVRGTHTLDLIKGGFPSSPGKYLFGAGVVDFGRNIWA
*****	SEQ ID NO:06	ETYFADVPAEAFKTLTALKGVTAFGFDLVRGAQTLDDLIKGGFPSSPGKYLFGAGVVDFGRNIWA
*****	SEQ ID NO:08	-----
*****	SEQ ID NO:10	-----
*****	SEQ ID NO:11	ETYFADIPAETYKILTTALKGVTAFGFDLVRGAKTLDDLIKGGFPSSPGKYLFGAGVVDFGRNIWA

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SEQ ID NO: 02	DDLAAISLSTLHSLEAVAGKDKLVLVSTSCSLMHTAVDLVNETKLDDEIKSWLAFAAQKVVE
SEQ ID NO: 04	NDLAASLTTLQGLEGIVGKDKLVLVSTSSSLHTAVDLVNETKLDDEIKSWLAFAAQKVIVE
SEQ ID NO: 06	NDLAASLNLLQSLEGIVGKDKLVLVSTSCSLLHTAVDLVNETKLDDEIKSWLAFAAQKVVE
SEQ ID NO: 08	-----
SEQ ID NO: 10	-----
SEQ ID NO: 11	NDLAASLSTLQSLLEGIVGKDKLVLVSTSCSLLHTAVDLVNEPKLDKEIKSWLAFAAQKVVE

301 260

FIGURE 2 CONTINUED

SEQ	ID NO: 02	LDI DVVLVHGEPERNDMVEYFGEQLSGFAFTANGWVQSYGSRCVKPPIIYGDVSSRPNPMTV
SEQ	ID NO: 04	LDI DVVLVHGEPERNDMVEYFGEQLSGFAFTVNGWVQSYGSRCVKPPIIYGDVSSRPKPMTV
SEQ	ID NO: 06	LDI DVVLVHGEPERNDMVEYFGEQLSGFAFTANGWVQSYGSRCVKPPIIYGDVSSRPNPMTV
SEQ	ID NO: 08	-----
SEQ	ID NO: 10	LDIDVVLQ-----
SEQ	ID NO: 11	LDI DVVLVHGEPERNDMVEYFGEQLSGFAFTANGWVQSYGSRCVKPPIIYGDVSSRPNPMTV

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FIGURE 2 CONTINUED

SEQ	ID	NO: 02	VIQIDEAALREGGLPLRKSEHAFYLDWAVHSERITNCGVQDTTQIHTHMCYSNFNDIIHSI
SEQ	ID	NO: 04	VIQIDEAALREGGLPLRKSEQAHYLDWAHAFRITNVGVQDTTQIHTHMCYSNFNDIIHSI
SEQ	ID	NO: 06	VIQIDEAALREGGLPLRKAEHAFYLNWAVHSERITNVGIQDTTQIHTHMCYSNFNDIIHSI
SEQ	ID	NO: 08	-----
SEQ	ID	NO: 10	-----
SEQ	ID	NO: 11	VIQIDEAALREGGLPLRKAEHAFYLDWAVHSERITNLPLQDTTQIHTHMCYSNFNDIIHSI

SEQ	ID	NO:	02
SEQ	ID	NO:	04
SEQ	ID	NO:	06
SEQ	ID	NO:	08
SEQ	ID	NO:	10
SEQ	ID	NO:	11

1DMDADVITIENSRSDEKLLSVFREGVKYGAGIGPGVYDIHSPRIPSTEEIADRVEKMLA
1DMDADVITIENSRSDEKLLSVFREGVKYGAGIGPGVYDIHSPRIPSTEEIADRINKMLA
1DMDADVITIENSRSDEKLLSVFREGVKYGAGIGPGVYDIHSPRIPSTEEIADRVNKM**L**

1DMDADVITIENSRSSEKLLSVFREGVKYGAGIGPGVYDIHSPRIPSTEEIADRINKMLA
1DMDADVMTIENSRSSEKLLSVFREGVKYGAGIGPGVYDIHSPRIPSTEEIADRINKMLA

FIGURE 2 CONTINUED

*
SEQ ID NO: 02 VFDTNILWVNPDCCGLKTRKYTEVKPALTNMVSATKLIRTLQLASAK
SEQ ID NO: 04 VLEKNILWVNPDCCGLKTRKYTEVKPPSQNMVAAKLIRYELA--K
SEQ ID NO: 06 VLDTNILWVNPDCCGLKTRKYAEVKPALENMVSAAKAIRTLQASSK

SEQ ID NO: 08 ---
SEQ ID NO: 10 ---
SEQ ID NO: 11 VLDTNILWVNPDCCGLKTRKYAEVKPALENMVSAAKLIRTLQASAK
721 765